Impact of Patient Flow on Satisfaction of Care at the Outpatient Department at University Teaching Hospital of Butare (CHUB): A Cross-Sectional Study

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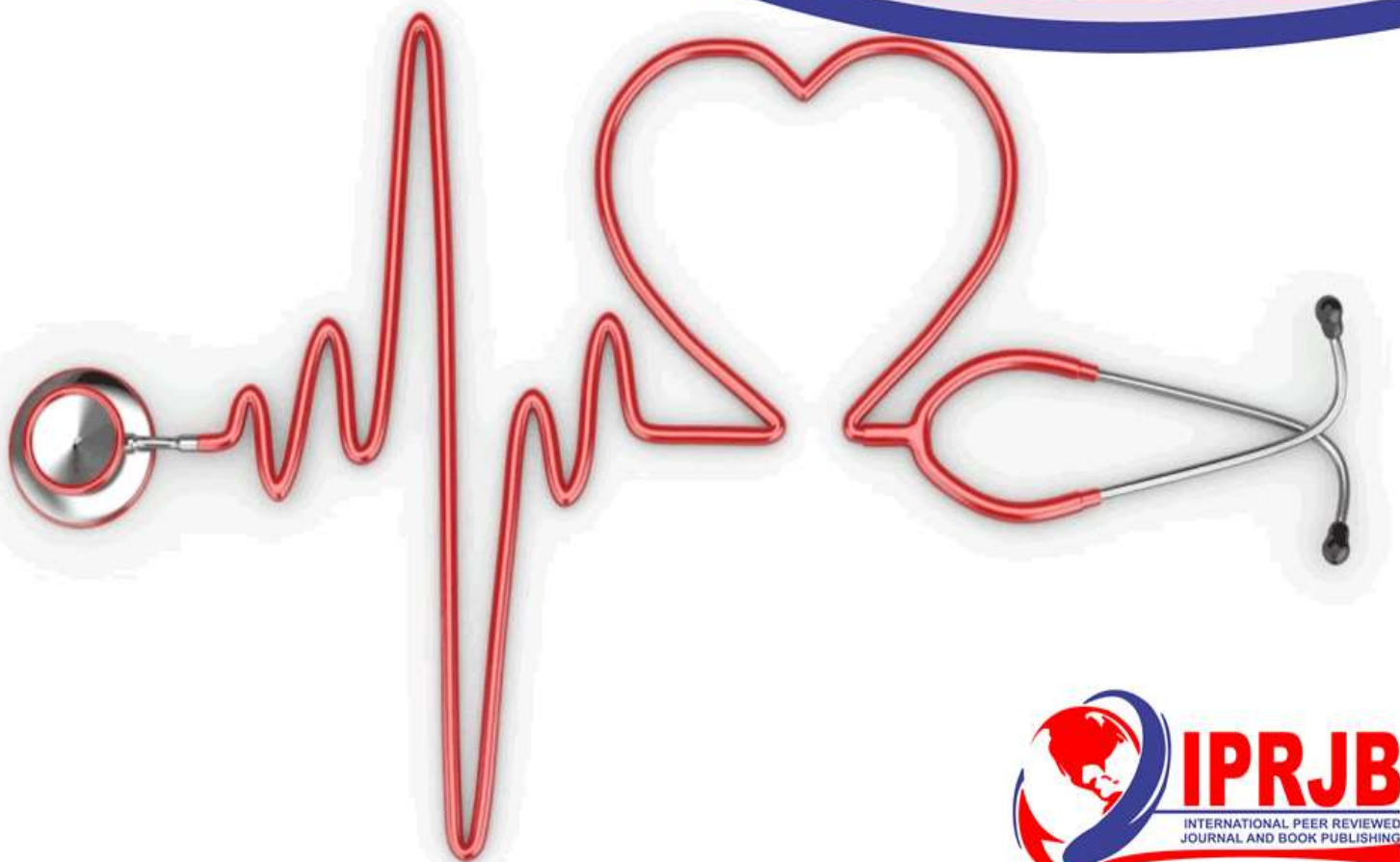
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Impact of Patient Flow on Satisfaction of Care at the Outpatient Department at University Teaching Hospital of Butare (CHUB): A Cross-Sectional Study

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Article History

Crossref

Abstract

Purpose: Patient satisfaction is important for assessing the efficiency of healthcare services provided to clients. When people visit healthcare institutions, they strongly desire high-quality care. Unsatisfying anticipated requirements and expectations may result in dissatisfaction. This study aimed to determine the impact of patient flow on satisfaction of care at outpatient departments of the University Teaching Hospital of Butare (CHUB).

Methodology: A cross-sectional study was conducted at CHUB, with 779 outpatients. Surveys were used to obtain information regarding patient characteristics, waiting time, and level of satisfaction.

Findings: The overall patient satisfaction rate was 81%. Satisfaction levels varied significantly across different outpatient departments, with the Maternity department having the highest satisfaction rate at 90% and the Surgery department t with the lowest at 78%. There was a significant association between the total time spent on services and patient satisfaction ($p = 0.001$). Specifically, an increase in the time spent in services by 1% was associated with a decrease in patient satisfaction (B = -0.002, 95% CI [-0.003, -0.001]).

Unique Contribution to Theory, Practice and Policy: The analysis found that Overall, client satisfaction was high. Addressing patient flow issues, such as high wait times, lack of medecine in pharmacy and lack of orientation, to greatly increase patient satisfaction in CHUB outpatient departments, to improve care quality, targeted interventions, such as appointment systems, additional personnel, and improved customer service should be implemented.

Keywords: *Patient Flow, Satisfaction of Care, Outpatient Department, University Teaching Hospital*

JEL Codes: *I11, I18, D73*

INTRODUCTION

Patient satisfaction is an important statistic for assessing the effectiveness and quality of healthcare service[1]. When patients visit healthcare institutions, they are expected to receive high-quality care that meets their specific needs. Failure to appropriately satisfy these demands can result in patient discontent, which can have far-reaching effects, such as reduced treatment adherence, lower healthcare utilization, and bad word-of-mouth, and affect the patient's willingness to return to the hospital, which ultimately impacts the continuity of care[1,2]. The outpatient department (OPD) is frequently the busiest and most congested area in hospitals. Overcrowding in OPD can lead to delayed treatment, longer patient stays, greater staff workload, higher medical error rates, and decreased productivity[3,4]. These issues are frequently caused by inefficient patient flow systems, which can be influenced by factors such as patient volume, personnel availability, and resource allocation. Improving patient flow is critical for improving patient experience and overall satisfaction with healthcare services[1]. Different plans for investigating how organizational disparities in treatment affect patient waiting times are crucial to standardizing hospital care to enhance patient flow and care satisfaction. Queuing and waiting place a strain on workers, clients, and resources. This has a negative impact on the patient experience, as waiting is one of the most critical elements affecting patient satisfaction[5].

The status of patient flow in outpatient departments has not been investigated, and no statistics on the factors influencing patient satisfaction in Rwanda or at the University Teaching Hospital of Butare (CHUB) are available. The purpose of this study was to analyze the waiting time at each point for non-emergency adult patients seeking healthcare in the outpatient department of CHUB, as well as to assess patient satisfaction and associated factors.

The findings of this study will help to better understand the crucial links between patient flow and care quality, informing the creation of targeted interventions to improve patient experience and healthcare outcomes in hospitals. The precise aims of the study were as follows: 1. The average waiting time experienced by patients in the CHUB outpatient departments were determined. 2. Determine overall patient satisfaction at CHUB outpatient departments. 3. To investigate the relationship between patient flow characteristics (waiting time) and patient satisfaction with quality of service. 4. To find other factors that may influence patient satisfaction with the quality of service in CHUB Outpatient Departments.

By addressing these objectives, this study hopes to provide significant insights that will drive the implementation of evidence-based solutions to optimize patient flow and increase patient satisfaction with the quality of service at CHUB outpatient departments.

Problem Statement

Patient satisfaction is a critical measure of the quality and efficiency of healthcare services. Despite its importance, patient satisfaction in outpatient departments, particularly in low-resource settings such as Rwanda, remains understudied. In the University Teaching Hospital of Butare (CHUB), there is a lack of comprehensive data on how patient flow affects the overall satisfaction of care. Overcrowding, prolonged waiting times, and inefficiencies in service delivery are common challenges faced in outpatient departments. These issues can lead to patient frustration, reduced adherence to treatment plans, and overall dissatisfaction with healthcare services.

Previous studies have highlighted the negative impact of waiting times and patient flow inefficiencies on satisfaction. However, these findings have largely been derived from high-

income or urban healthcare settings, leaving a significant knowledge gap in understanding these dynamics in low-income countries like Rwanda. Furthermore, there is limited research that quantifies the specific relationship between patient flow characteristics and satisfaction levels in outpatient settings. This leaves healthcare managers and policymakers without the necessary data to implement targeted interventions to optimize patient care experiences.

METHODOLOGY

Study Design and Setting

In September 2023, a cross-sectional study was conducted in the outpatient department of Rwanda CHUB. The hospital is one of the best national referral hospitals in the country, which means it accepts patients within its catchment region, as well as patients from all across the country, due to its skill in specialist services. The hospital provides a variety of outpatient treatments, such as noncommunicable disease management, gynecology and obstetrics consultations, dentistry specialty services, ophthalmology services, mental health services, surgery, physiotherapy, internal medicine, pediatrics, and otolaryngology (ENT), et al.

Study Population

The study population included patients who visited CHUB's outpatient department during the study period.

Eligibility Criteria

Patients who were 18 years or older and were consulting OPDs qualified for research enrollment. The following patients met the exclusion criteria: all patients aged < 18 years; patients who were very sick or incapable of communicating; patients undergoing daycare procedures, including endoscopic procedures, physiotherapy, and medical imaging; patients undergoing day care surgery, even if they had already finished the initial outpatient consultation; and patients in prison or mentally ill. Upon completing a signed informed consent form, all individuals who met the inclusion criteria were recruited for this study.

Sampling Strategy

Convenience sampling was used in this study. Based on the hospital's yearly outpatient statistics, we estimated that the three major departments (Internal Medicine, Surgery, and Obstetrics & Gynecology) serviced approximately 53,597 people per year. Assuming a daily patient flow of approximately 206 throughout these departments, we sought to recruit a target sample of 800 patients over a four-week data collection period. This method depended on recruiting participants from the available pool of patients who visited outpatient departments throughout the study period without using any formal statistical sampling techniques or sample size estimates.

Data Collection Tool

The data collection tools included the following: 1. The patient characteristics form collects information such as age, gender, socioeconomic status, insurance type, educational level, and department visited. 2. Patient flow monitoring form: This form recorded the time of arrival at each service point. 3. Patient satisfaction survey: A numerical scale was used to assess overall satisfaction and open-ended questions to elicit reasons for displeasure. Data collection assistants were taught during the data-gathering processes and instruments. They addressed eligible patients, described the study objectives, and provided informed consent before beginning data collection.

Data Collection

Data were gathered using a standardized questionnaire administered by professional data collection study assistants. The questionnaire included questions on sociodemographic variables, patient flow parameters (waiting time and consultation time), and patient satisfaction with quality of care. Waiting time was defined as the time between the patient's arrival at the outpatient department and the start of the consultation, whereas consultation time was defined as the duration of the patient's interaction with the healthcare professional.

Patient satisfaction was measured using a validated patient satisfaction scale that evaluates different components of the healthcare experience, including communication, empathy, and perceived quality of services. Patients were asked to score their satisfaction on a 5-point Likert scale, ranging from "very dissatisfied" to "very satisfied."

Data Quality Control

Several safeguards were implemented to ensure data quality. A pre-test was performed. Participants in the pretest were excluded from the main study. The collected data were thoroughly checked for completeness, accuracy, and clarity. The analysis found no need for changes to the questionnaire.

Data Analysis

The data were entered into an Excel spreadsheet and imported into the Statistical Package for Social Sciences (SPSS) Version 24 for analysis. Before data analysis, the acquired data were organized, and cleansed by deleting incorrect/duplicated data, checking for errors or omissions, and inputting electronically. Numerical continuous variables were evaluated using means and standard deviations, whereas qualitative data were presented as percentages.

Ethical Considerations

The Institutional Review Board of the University of Butare examined and approved the study Participants were thoroughly informed about the purpose and objectives of the study prior to enrollment. The research team explained the study in detail, ensuring that participants understood their role and the study's significance. All eligible participants provided informed consent before participating in the study. The confidentiality and anonymity of the participants were protected throughout the research process.

RESULTS

The study successfully enrolled 800 individuals, of which 779 (97%) completed the survey. The majority of participants (91%) were from the Southern Province, and 60% were female (**Table 1**). Most participants (52%) were between the ages between 36 and 65. In terms of healthcare utilization, 57% of individuals have visited the CHUB more than twice (**Figure 2**). The participants' educational levels varied, with 41% having received a primary education (**Figure 3, Figure 4**). The majority (77%) were covered by the Community-Based Health Insurance (CBHI) program (**Figure 4**). Participants sought care from a variety of outpatient departments, with 39% attending surgery and 36% visiting Internal Medicine (**Figure 5**).

Most participants (55%) arrived at the hospital between 8:00 and 10:00 a.m., with 34% arriving early (5:00-7:59 a.m.), and only 11% arriving after 10:00 a.m. (**Table 2**).

Patient Satisfaction Levels: The overall patient satisfaction rate at CHUB was 81% (**Figure 6**). However, satisfaction levels differed among the outpatient departments. The Maternity

department had the highest satisfaction rate of 90%, while the surgery department had the lowest at 78% (**Figure 7**). Patients who lived further away from CHUB reported lower levels of satisfaction, with nearly two-thirds of them being unsatisfied with the care they received (**Figure 8**).

Discussion

This cross-sectional study examined how patient flow metrics, specifically waiting and consultation times, affect patient satisfaction with care at Rwanda's University Teaching Hospital of Butare (CHUB) at outpatient departments. Most of them, about 91% came from the southern province, 60% of the participants, and 52% were aged between 36 and 65 years. In terms of healthcare utilization, 57% visited the CHUB more than twice, and about educational level, 41 % attained primary education.

The findings shed light on the essential relationship between patient flow and healthcare service quality, as perceived by patients. The study found that both longer waiting periods and shorter appointment times were strongly related to lower patient satisfaction. These findings are similar to those of earlier studies conducted in various healthcare settings, which repeatedly showed that inefficient patient flow had a negative influence on patient experience and satisfaction[6–8].

Prolonged wait periods can cause patients to become frustrated, and anxious, and have negative opinions regarding quality of care[9,10]. Patients may believe that their time is not valued, and they may develop feelings of being ignored or neglected by the healthcare system. This can have far-reaching effects since disgruntled patients are less likely to follow treatment recommendations, seek further care, or refer the hospital to others[11,12]. Inefficient patient flow can also lead to increased staff burnout and low morale, worsening the quality of the care provided[13,14]. By contrast, shorter consultation periods can leave patients feeling rushed, with few opportunities to express their concerns or receive acceptable answers from healthcare practitioners[15–17].

Insufficient time for good communication and shared decision-making might jeopardize the patient-provider relationship and result in poor healthcare outcomes[11,17]. Patients may believe that their requirements are not fully met, resulting in poor satisfaction with quality of care.

The findings of this study suggest that interventions aimed at improving patient flow, such as streamlining registration and triage processes, optimizing staff scheduling, and improving communication between patients and providers, may help increase patient satisfaction with the quality of care in CHUB outpatient departments.

By resolving the identified impediments in patient flow, the hospital can endeavor to provide a more positive and engaging healthcare experience for its patients. In addition to patient flow characteristics, this study discovered that other aspects, such as effective contact with healthcare practitioners and perceived facility cleanliness, were strongly associated with increased patient satisfaction. These findings are consistent with previous research on the multifaceted character of patient satisfaction, which includes components of the healthcare experience other than the efficiency of service delivery[5,18].

Effective communication between patients and healthcare providers, characterized by active listening, empathy, and provision of clear explanations, can foster a sense of trust and partnership, leading to increased patient satisfaction[2,11,17]. Similarly, the perceived cleanliness and orderliness of a healthcare facility can contribute to patients' overall impression of the

quality of care, as it reflects the hospital's commitment to maintaining a safe and hygienic environment[19,20].

Patient Satisfaction and Waiting Time

This study provides valuable insights into patient satisfaction levels at CHUB, highlighting key areas for improvement. The overall patient satisfaction rate at CHUB was 81%, with differences between departments. The maternity department had the highest satisfaction rate at 90%, whereas the surgical department had the lowest at 78% (**Figure 7, Figure 10**). The logistic regression analysis revealed a significant negative association between the total time spent in services and patient satisfaction (p = 0.001). Specifically, an increase in the time spent in services by 1% was associated with a decrease in patient satisfaction (B = -0.002, 95% CI [-0.003, -0.001]). This finding underscores the importance of reducing waiting times and improving service efficiency to enhance patient satisfaction. These findings support previous research indicating that patient care satisfaction is closely related to the efficiency and effectiveness of healthcare services[21,22], Manju et al. (2021) noted that patient satisfaction is determined by the emotions, feelings, and perceptions of the care they receive, all of which are directly influenced by wait times and service delivery efficiency[23]. According to a study by Chandra et al. The majority (69.3%) of the patients were generally fully satisfied with their consultation where age, gender, education level, waiting time, doctors' communication behavior, and patient trust level were significantly associated with patient satisfaction[24].

This study found that longer waiting times at various service points within the outpatient department of CHUB are significantly associated with lower patient satisfaction. The p-value for the overall association between waiting time and patient satisfaction is 0.001, indicating a highly significant relationship. Specifically, time spent at the doctor's office (mean 89.4 minutes, p = 0.001, 95% CI [0.80, 1.35]) and imaging (mean 84.0 minutes, p = 0.001, 95% CI [0.80, 1.35]) (**Table 3**) were the most significant contributors to dissatisfaction. Which seems to be higher than with study conducted by Roya Jalili, et al. where in their study results, the longest average waiting time was in the radiology clinic (27±11 minutes)[25]. This extended wait time at important service points most definitely contributed to poorer satisfaction levels, especially in departments with more sophisticated and time-consuming operations, such as surgery. According to satisfaction studies conducted at Nepal Medical College Teaching Hospital, the satisfaction level with OPD services was 52.9%, which is lower than the overall satisfaction rate (81%) observed in this study[26]. Also, according to Ukizentaburuwe et al. the cross-sectional study conducted at Kibungo Referral Hospital The median outpatient waiting time was 4 hours. Female patients were 48% less likely to wait for a longer time than men[27]. Donabedian's model, which defines patient satisfaction as a patient-reported outcome measure, supports this conclusion by emphasizing that excessive wait times might negatively affect patients' perceptions of service quality[28].

Factors Affecting Patient Satisfaction

Several problems were noted as leading to patient discontent at CHUB, including scarcity of drugs in the pharmacy, inadequate staff orientation, and scattered services that required payment at multiple sites. A considerable majority of participants mentioned these challenges, with 28% citing a lack of medicines and 26% citing uncertain orientation as important concerns (**Figure 9**). This is consistent with prior research that found logistical inefficiencies and communication obstacles to be major predictors of patient satisfaction in hospital settings[5,29].

The current investigation also highlighted the causes of prolonged waiting, as reported by patients. The patients mentioned a large number of patients, a lack of equipment, a staff shortage, and prioritization of very ill patients over other patients, bad weather that caused laboratory results to take longer, securing laboratory results for large groups rather than a few individuals, and nepotism and negligence of health care providers. Several studies have reported comparable reasons for waiting time[9,30–32].

Limitations of the Study

The findings of this study, which focused on a specific healthcare facility, may not be generalizable to other settings or situations. The CHUB has unique characteristics and a patient population that may limit the applicability of these findings to other hospitals or locations. Furthermore, relying on self-reported data from patients may create biases such as recall bias or social desirability bias. Patients' recollection of wait times and satisfaction levels may be influenced by various factors, including personal experiences and perceptions, which may not necessarily correspond to real service performance measures.

Implications of the Study

Future studies should investigate these aspects in broader contexts, perhaps through longitudinal studies, to develop more complete strategies for improving patient satisfaction in hospital settings. Incorporating qualitative methodologies, such as in-depth interviews or focus groups, may provide deeper insights into patient experiences and the underlying variables affecting satisfaction.

CONCLUSION AND RECOMMENDATIONS

The findings of this study show a substantial link between patient flow and care satisfaction with wait times at CHUB. Addressing identified concerns with targeted interventions, such as appointment systems, greater staffing, service segregation, satellite pharmacies, improved customer service, and digitalization can greatly improve patient care satisfaction and healthcare quality. Implementing these guidelines can help optimize patient flow, minimize wait times, and improve overall patient experience in CHUB outpatient departments.

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Figures and Legends

Table 1: Sociodemographic Characteristics of Patients (Participants N=779)

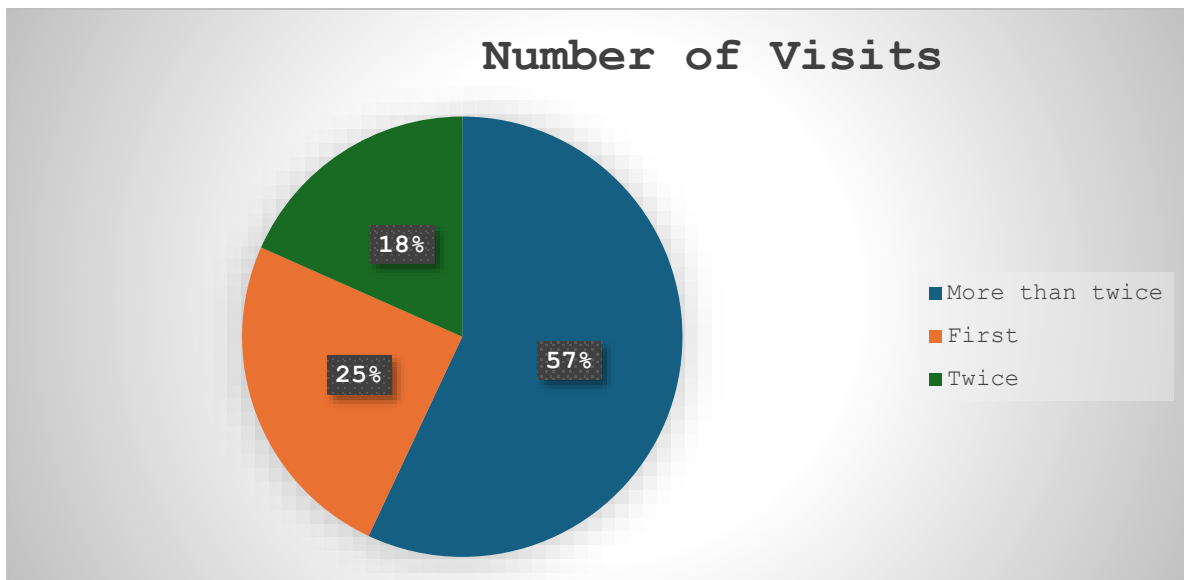|	Female	Percentage	Male	Percentage	Total	Percentage
15-25	58	12%	60	19%	118	15%
26-35	82	17%	62	20%	144	18%
36-45	110	23%	47	15%	157	20%
46-55	101	21%	28	9%	129	17%
56-65	69	15%	46	15%	115	15%
66-75	43	9%	51	17%	94	12%
76-85	5	1%	13	4%	18	2%
86+	3	1%	1	0%	4	1%
Total	**471**	**100%**	**308**	**100%**	**779**	**100%**

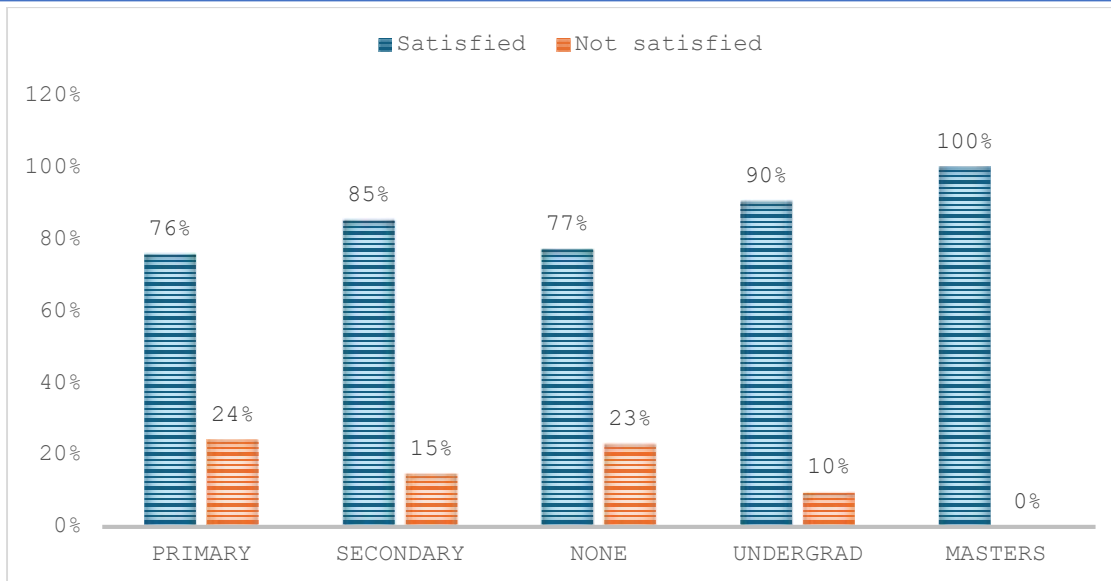*Figure 2: illustrates the Number of Patient Visits*

Figure 3: Patient Satisfaction Based on their Education

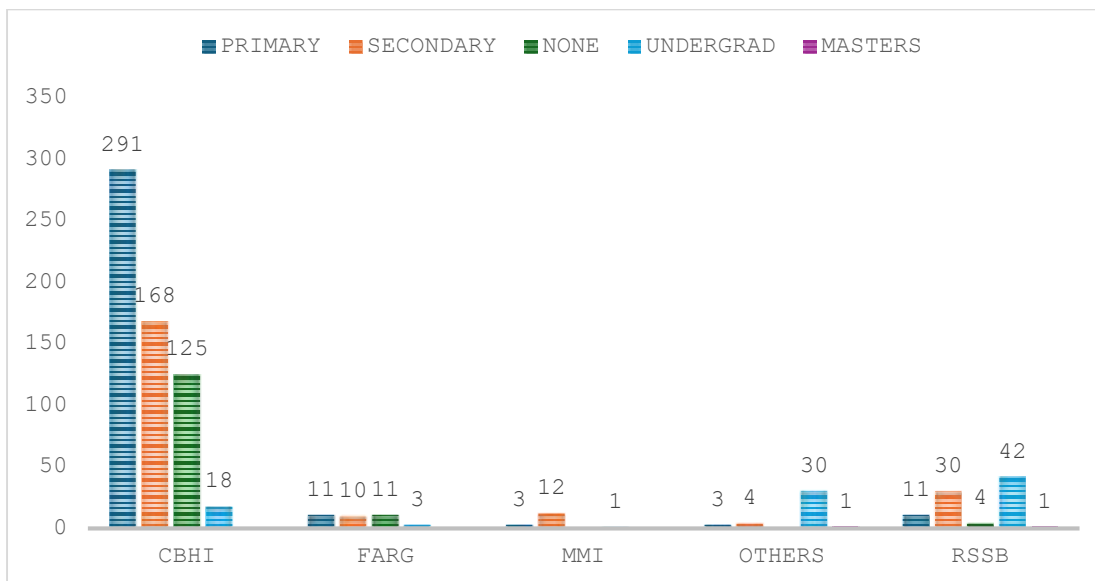*Figure 4: Educational Level with Insurance Types Used*

Table 2: Grouped Participants with their Arrival Time

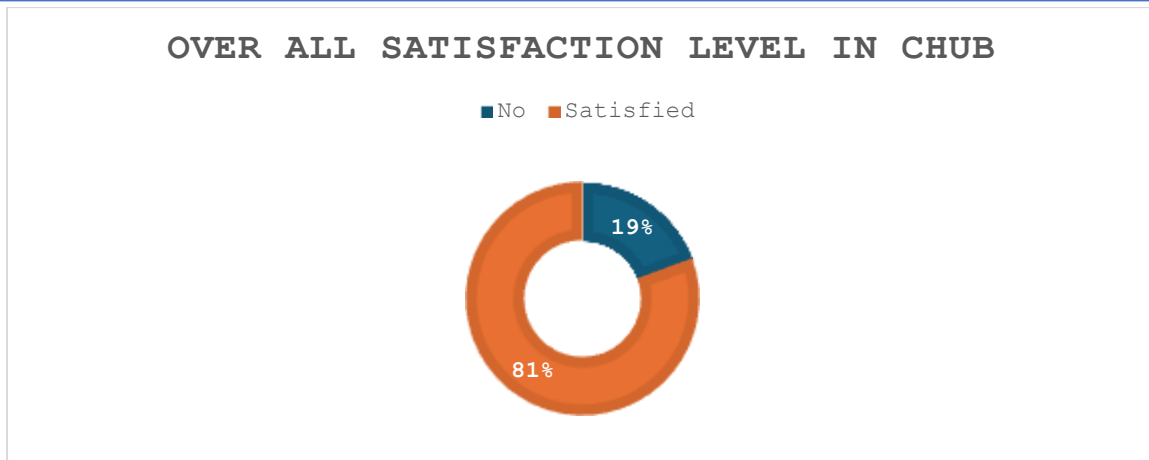| Row Labels	Count of Sr
>14:00pm	16
05:00-07:59am	262
08:00-10:59am	463
11:00am -13:59pm	38
Grand Total	**779**

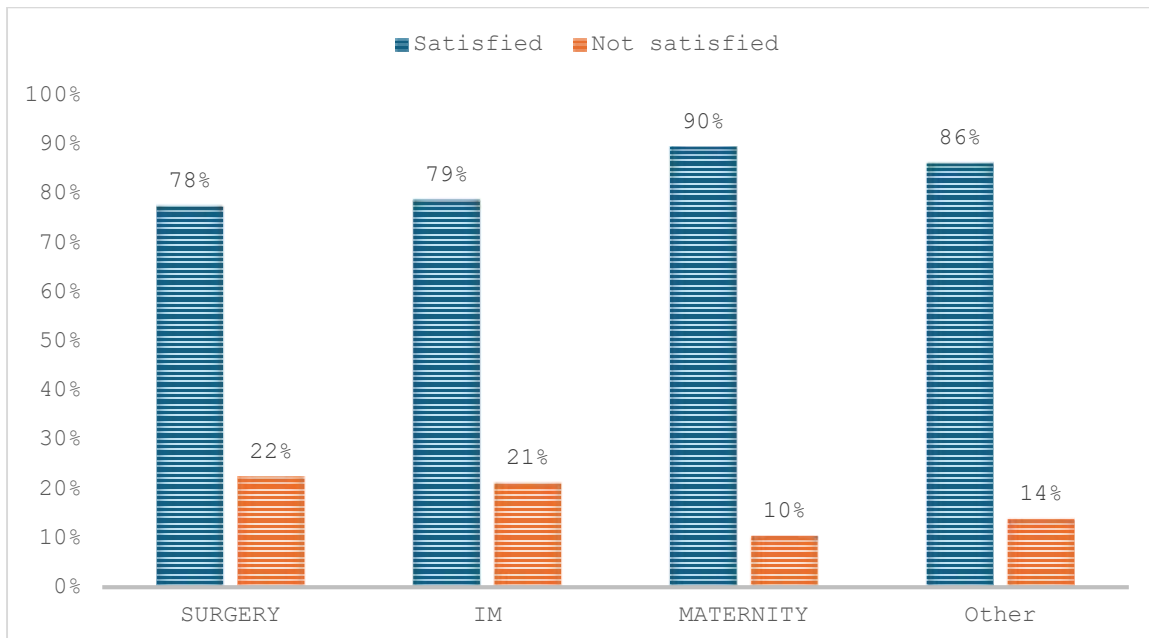*Figure 6: Overall CHUB Satisfaction Statistical Level*

Figure 7: This Bar Chart Shows Satisfaction (Blue) and Dissatisfaction (Orange) in Different Hospital Departments
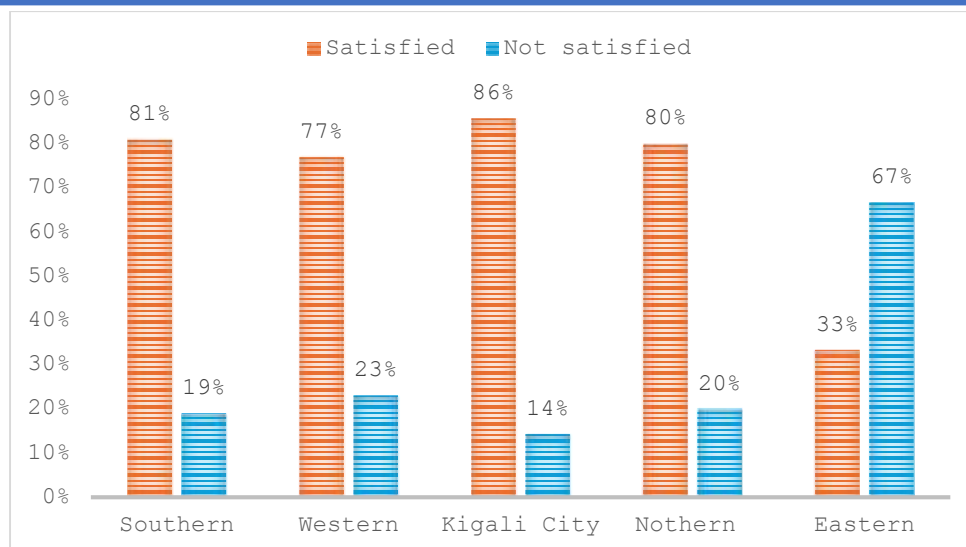
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Figure 8: This Bar Chart Illustrates the Levels of Satisfaction (Blue) and Dissatisfaction (Orange) across Different Regions (Province)

Table 3: Descriptive Statistics of Time Spent by Patients at Different Stages of the Outpatient Department Visit

| Time spent	Count	Mean	Standard Error	Median	Mode	Standard Deviation	Kurtosis	Skewness	P-value	95% CI
Reception	753	43.7	2.3	25.0	5.0	63.7	73.0	6.6	0.001	(0.75, 1.25)
Nurse desk	758	33.1	1.3	20.0	5.0	36.4	5.5	2.1	0.001	(0.80, 1.35)
Prepay desk	655	29.9	1.4	17.0	5.0	36.4	10.1	2.9	0.001	(0.80, 1.35)
Doctor's office	761	89.4	2.9	62.0	15.0	80.9	2.5	1.6	0.001	(0.80, 1.35)
For investigation to pay	303	33.6	2.6	19.0	5.0	44.8	18.5	3.7	0.001	(0.80, 1.35)
In phlebotomy	172	38.6	3.1	26.5	30.0	40.4	7.1	2.4	0.001	(0.80, 1.35)
Imaging	157	84.0	4.5	65.0	60.0	56.6	0.2	0.9	0.001	(0.80, 1.35)
Dr's office for results	177	82.9	5.9	60.0	10.0	78.7	2.7	1.6	0.001	(0.80, 1.35)
For Minor Surgery	23	124.3	15.5	86.0	80.0	74.3	0.6	1.1	0.001	(0.80, 1.35)
For billing at Pharmacy	200	14.6	1.0	10.0	10.0	14.0	13.5	2.8	0.001	(0.80, 1.35)
For Paying at Pharmacy	274	22.0	1.3	15.0	4.0	21.6	6.0	2.2	0.001	(0.80, 1.35)
For dispensing	150	14.8	0.9	12.0	14.0	11.1	1.0	1.2	0.001	(0.80, 1.35)
At Exit point	773	6.0	0.2	5.0	2.0	5.1	13.5	2.8	0.001	(0.80, 1.35)
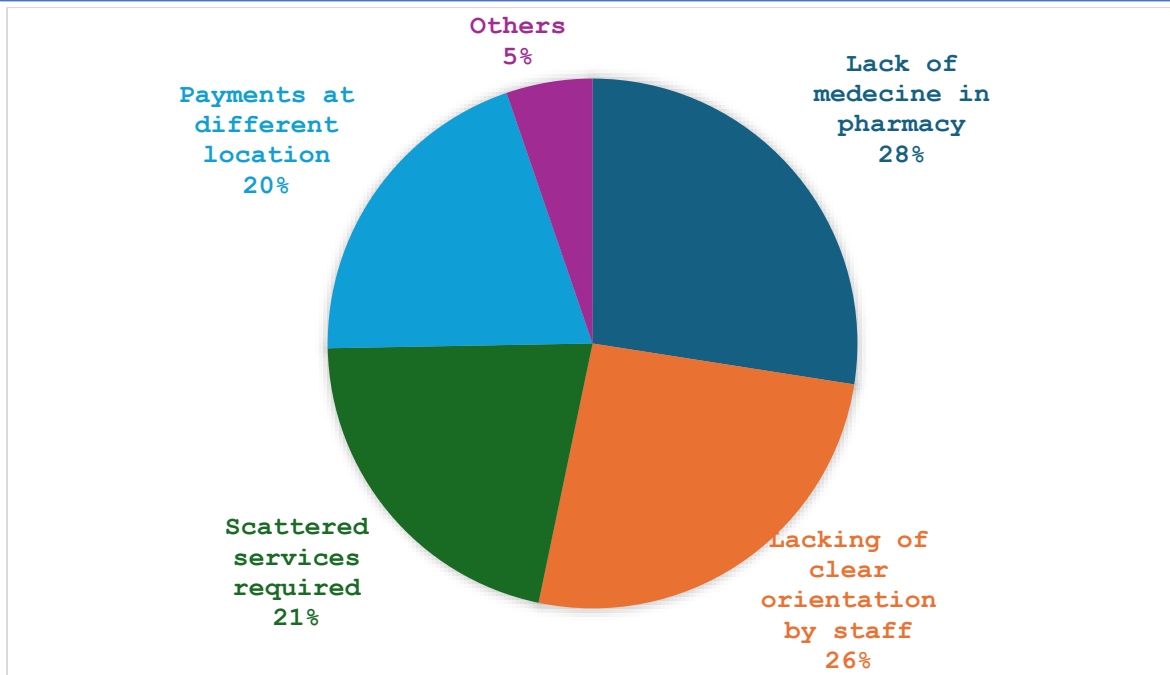
Figure 9: Factors Associated with Outpatient Waiting Time
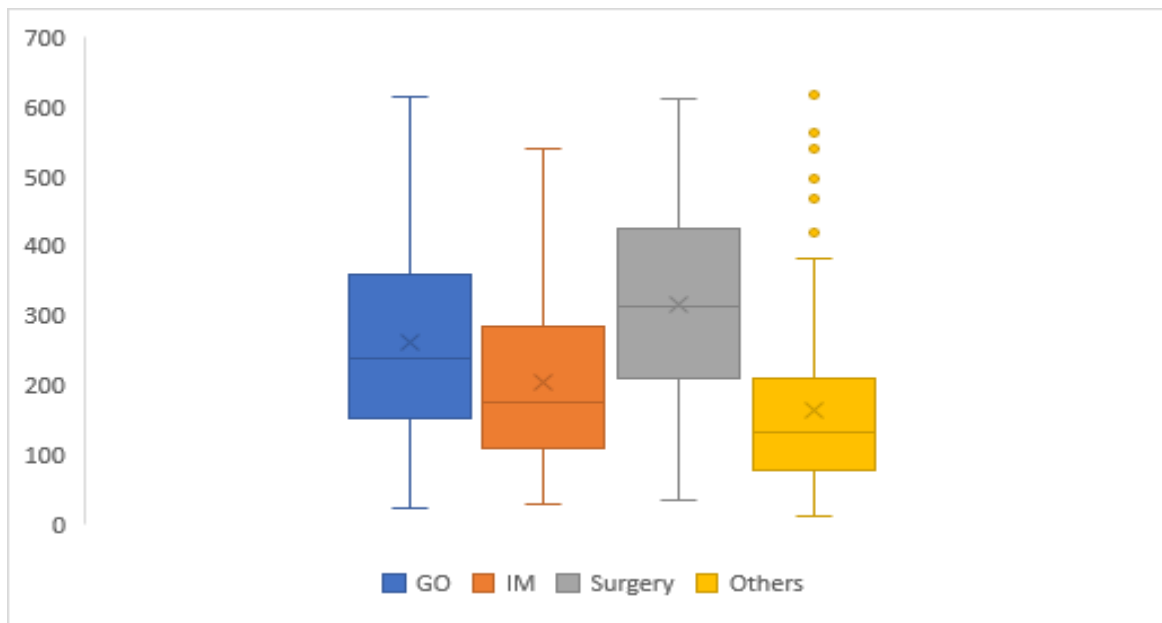
Figure 10: Box Plots Comparing Time Spent between Major Services (IM, Surgery, Maternity, Others)/Total Time Spent by Service in Minutes
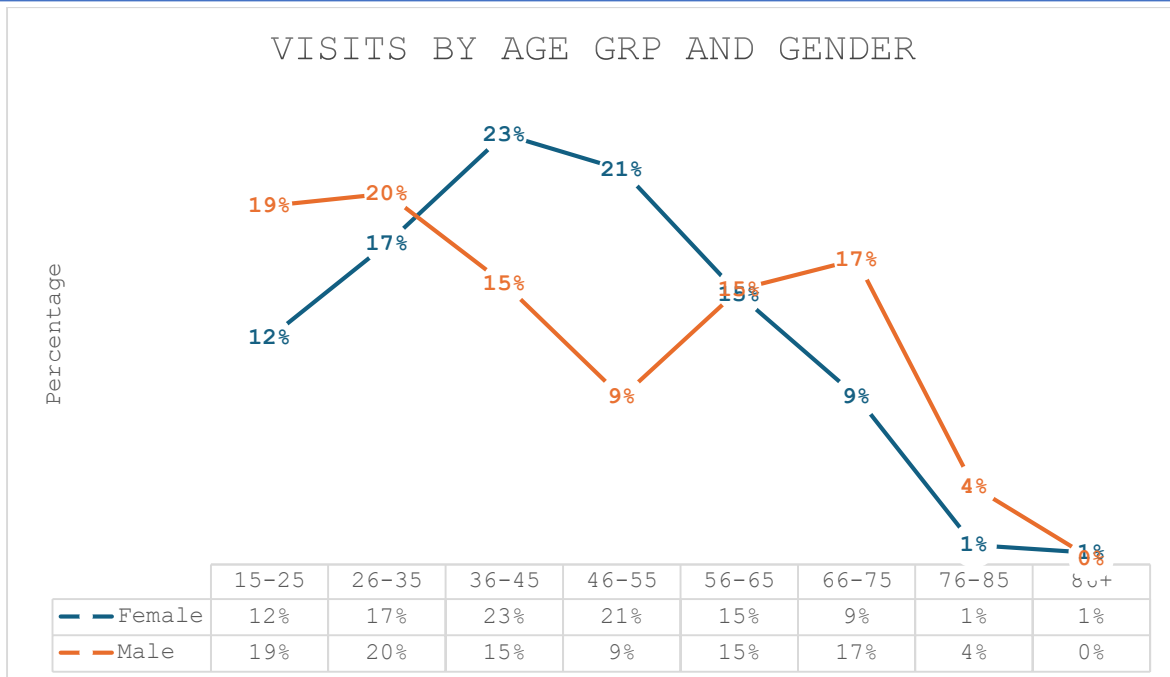
VISITS BY AGE GRP AND GENDER

	15-25	26-35	36-45	46-55	56-65	66-75	76-85	80+
Female	12%	17%	23%	21%	15%	9%	1%	1%
Male	19%	20%	15%	9%	15%	17%	4%	0%

Figure 11: Number of Visits by Gender and Age Group

- Services at single points
- Orientation by a custom care
- Phlebotomy at the consultant area
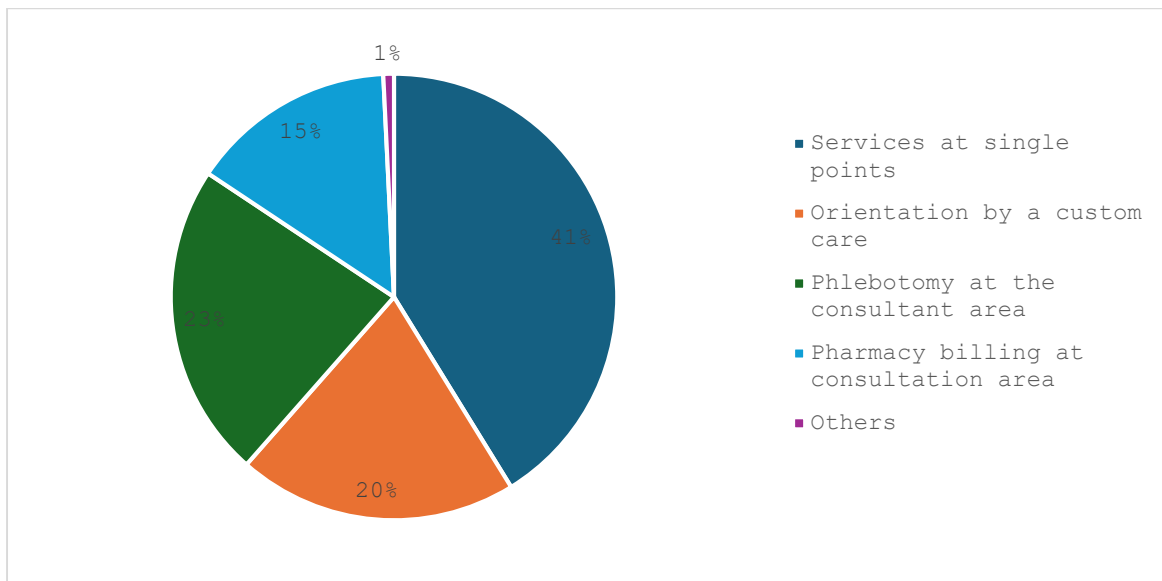- Pharmacy billing at consultation area
- Others

Figure 12: Illustrating Patient's Best Experience

Declarations:

Ethical approval: The Institutional Review Board of the University of Butare examined and approved the study protocol.

Consent: All eligible participants provided informed consent before participating in the study. The confidentiality and anonymity of the participants were protected throughout the research process.

Source of funding: This research is supported by CHUB.

Conflict of interest: None

Research registration unique identifying number: Not applicable.

Guarantor: All authors

Author's contribution: All authors participated in the data analysis, drafted or revised the article, provided final approval for the published version, and agreed to be held accountable for all parts of the work.